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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, CHUN KUAN

ART UNIT PAPER NUMBER

2181

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/749,493

Applicant(s)

SETO, PAK-LUNG

Examiner

Chun-Kuan (Mike) Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/28/05 and 6/9/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-2, 15-17, 19-22 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Haymes et al. (US Patent 6,654,383).

As per claim 1, Haymes teaches a system, method, apparatus and article comprising:

an intermediate device (Fig. 1 ref 102-106) comprising protocol sensing circuitry (detection circuitry 210, 212 of Fig. 1) being capable of determining, at least in part, at least one communication protocol, among a plurality of communication protocols (Abstract, and col. 1, l. 58 to col. 2, l. 21),

via which at least one storage device (storage media 504 of Fig. 5) connected to the intermediate device is capable of communicating (col. 11, l. 38 to col. 12, l. 8),

the intermediate device (clock and data recovery (CDR) 102 of Fig. 1) also comprising flow control circuitry (flow control utilizing phase lock loop (PLL))

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being capable of controlling a data stream that may be communicated from said storage device using at least one of a plurality of communication protocols (col. 1, l. 41 to col. 2, l. 58 and col. 10, l. 54 to col. 11, l. 38).

As per claim 2, Haymes teaches a system, method, apparatus and article comprising wherein the intermediate device (Fig. 1 ref 104, 106) is further capable of detecting a predetermined initialization signal sequence (protocol utilized for transferring the data stream) indicative of a communication protocol (Abstract and col. 3, ll. 20-67).

As per claims 15 and 20, Haymes teaches a system, method, apparatus and article comprising:

a storage device (Fig.5 ref 504) having stored thereon instructions that when executed by a machine result in the following operation (col. 11, l. 39 to col. 12, l. 8):

determining (determination by detection), at least in part, by the intermediate device (Fig. 1 ref 104, 106) at least one communicating protocol via which at least one storage device (Fig. 5 ref 504) connected to the intermediate device is capable of communicating (Abstract; col. 1, l. 58 to col. 2, l. 21 and col. 11, l. 38 to col. 12, l. 8); and

controlling, at least in part, by the intermediate device (Fig. 1 ref 102), at least one data stream from said at least one storage device in accordance with at least one communication protocol (col. 11, l. 13 to col. 12, l. 8).

As per claim 16, Haymes teaches a system, method, apparatus and article further comprising retiming, by the intermediate device (the CDR utilizing the PLL 102 of Fig. 1), said at least one data stream generated by said at least one storage device (col. 11, ll. 13-38).

As per claim 17, Haymes teaches a system, method, apparatus and article further comprising:

receiving, by the intermediate device (Fig. 1 ref 104, 106), an initialization signal sequence (protocol utilized for transferring the data stream) (Abstract; col. 1, l. 58 to col. 2, l. 58 and col. 3, ll. 34-54); and

selecting, by the intermediate device (Fig. 1 ref 104, 106), at least one communication protocol based on said initialization signal sequence (Abstract; col. 1, l. 58 to col. 2, l. 58 and col. 3, ll. 34-67).

As per claim 19, Haymes teaches a system, method, apparatus and article further comprising communicating, by the intermediate device (Fig. 1 ref 102, 104, 106) with said at least one storage device (Fig. 5 ref 504) with a selected communication protocol among a plurality of communication protocol (Abstract; col. 1, l. 58 to col. 2, l. 58 and col. 11, l. 39 to col. 12, l. 8).

Claims 21-22 and 24 repeat the limitations of claims 16-17 and 19 and are therefore rejected accordingly.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-4, 6, 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haymes et al. (US Patent 6,654,383) as applied to claims 1-2, 15-17, 19-22 and 24 above, and further in view of Wood et al. (US Patent 6,915,363).

As per claim 3-4, 6 and 18 Haymes teaches all the limitations of claims 1, 15 and 20 as discussed above, Haymes further teaches the system, method and apparatus comprising the protocol detection circuitry (Fig. 1 ref 104, 106) is also capable of receiving at least an analog burst signal sequence (col. 2, l. 49 to col. 4, l. 11); the flow control circuitry (the PLL within CDR 102 of Fig. 1) comprises data tracking circuitry capable of receiving (the PLL locking to a received incoming frequency) a data stream from said at least one storage device and also capable regenerating a clock signal indicative of the frequency of said data stream, said flow control circuitry also comprising retimer circuitry (CDR 102 of Fig. 1) capable of receiving said data stream and said clock signal and generating a retimed data stream (col. 1 ll. 40-52 and col. 11, ll. 13-38), as it is well known in the art to use PLL to generate the data stream at a different clock

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frequency by receiving an incoming clock frequency and generate a different clock frequency, thus output a retimed data stream utilizing said generated clock frequency; wherein the plurality of different communication protocols comprise the Fiber Channel protocol (column 2, line 48-58); determining (determination by the PLL locking to the incoming frequency of the received data stream), by the intermediate device (Fig. 1 ref 102), a link frequency (col. 1, ll. 40-52 and col. 11, ll. 13-38); and communicate, by the intermediate device (Fig. 1 ref 102) using said link frequency (col. 1, ll. 40-52 and col. 11, ll. 13-38).

Haymes does not teach the system, method, apparatus and article comprising wherein the predetermined signal sequence comprises an out-of-band (OOB) signal sequence; receiving of at least one of the OOB sequence; wherein the plurality of different communication protocols comprise of a Serial Attached Small (SAS) Computer System Interface protocol, and a Serial Advanced Technology Attachment (SATA) protocol; and the link frequency is associated with the storage device.

Wood teaches a system, method, apparatus and article comprising a predetermined OOB signal utilized by a disk drive coupled to the host computer (Fig. 2; col. 2, l. 34 to col. 3, l. 28 and col. 5, ll. 36-54); and data communication utilizing the SATA communication protocol and the SAS communication protocol by the disk drive (col. 5, ll. 16-35), obviously at the appropriate data rate (link frequency) in accordance with the communication protocol utilized.

Therefore, it would have been obvious to one of ordinary skill in this art, at the time of invention was made to modify Haymes to include the predetermined

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OOB sequence, the SAS and the SATA communication protocols as taught by Wood, because doing so would further add and expand Haymes' system, method, apparatus and article by providing a greater control over the disk drive, such as the spin-up time, so arrays of disk drives may be more effectively used in multi-drive arrays (col. 2, ll. 34-59).

Claim 23 repeats the limitations of claim 18 and is therefore rejected accordingly.

3. Claims 5, 7, 9-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haymes et al. (US Patent 6,654,383) as applied to claims 1-2, 15-17, 19-22 and 24 above, and further in view of the "Parallel vs. Serial ATA"

As per claims 5, 7 and 9, Haymes teaches all the limitations of claim 1 as discussed above.

Haymes does not teach the system, method, apparatus and article comprising wherein the intermediate device is capable of being coupled, via at least one cable, to said storage device; wherein the intermediate device is capable of being coupled to a cable compatible with at least one of said communication protocol; and a circuit board comprising an integrated circuit capable of communicating in accordance with a plurality of different communication protocols, the circuit card being coupled to a bus, and an intermediate device coupled to said circuit board.

"Parallel vs. Serial ATA" teaches a system and method comprising a cable (bus) coupling the hard drive to the motherboard (circuit card) (Fig. 2 on page 3 and Fig. 6 on page 6); wherein said cable is compatible with the communication protocol (Figures 2-3 on page 3); wherein the motherboard is capable of communicating with the hard drive in accordance with a plurality of different communication protocols (Fig. 6 on page 5); and wherein an adapter (intermediate device) is coupled to the motherboard (Figures on page 4).

Therefore, it would have been obvious to one of ordinary skill in this art, at the time of invention was made to modify Haymes to include the cable or the like, compatible with the communication protocol, to couple the intermediate device to the storage device, conforming with at least one of said communication protocols, and the circuit board, capable of communicating in accordance with a plurality of different communication protocols, coupled to the intermediate device utilizing said cable, as taught by "Parallel vs. Serial ATA", because it is well known in the art regarding the use of cable to interconnect hardware devices and cards within a computer system, such as the interconnection of hard drive to the intermediate device and the intermediate device to the motherboard.

As per claim 10, Haymes as modified teaches the system, method, apparatus and article comprising wherein the intermediate device ("Parallel vs. Serial ATA", adapter in figures on page 4) is coupled to said circuit card ("Parallel vs. Serial ATA", motherboard in figures on page 5) and said storage media via one or more cables ("Parallel vs. Serial ATA", Fig. 6 on page 5).

As per claim 11, Haymes as modified teaches the system, method, apparatus and article comprising wherein the intermediate device is capable of detecting a predetermined initialization signal sequence indicative of at least one of said plurality of communication protocol (Haymes, Abstract and col. 3, ll. 20-67).

As per claim 13, Haymes as modified teaches the system, method, apparatus and article comprising wherein the intermediate device (Fig. 1 ref 102) is further capable of controlling said data stream to produce a retimed data stream, and transmitting the retimed data stream to at least one of the circuit card and the storage device (Haymes, col. 11, ll. 13-38).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haymes et al. (US Patent 6,654,383) as applied to claims 1-2, 15-17, 19-22 and 24 above, and further in view of the "Fiber Channel Tutorial".

Haymes teaches all the limitations of claim 1 as discussed above. Haymes further teaches the system, method, apparatus and article comprising wherein the intermediate device further comprises protocol control circuitry capable of receiving a signal from said storage device (col. 2, ll. 49-58 and col. 11, ll. 39 to col. 12, l. 8).

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Haymes does not teach the system, method, apparatus and apparatus comprising wherein the intermediate device in response to the received signal, generating an acknowledge signal to be transmitted to said storage device.

"Fiber Channel Tutorial" teaches the system and method comprising when destination receives a frame (signal), an ACK frame (acknowledge signal) is returned to the source (Flow Control section on page 9).

Therefore, it would have been obvious to one of ordinary skill in this art, at the time of invention was made to modify Haymes to include the acknowledge signal as taught by "Fiber Channel Tutorial" in order to conform to the fiber channel communication protocol utilized by Haymes' system, method, apparatus and article (col. 2, ll. 49-58).

5. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haymes et al. (US Patent 6,654,383) in view of the "Parallel vs. Serial ATA" as applied to claims 5 and 9-11 above, and further in view of Wood et al. (US Patent 6,915,363).

Haymes combined with Parallel vs. Serial ATA teaches claim 9.

Haymes combined with Parallel vs. Serial ATA does not teach the system, method, apparatus and article comprising wherein the predetermined signal sequence comprises the OOB signal sequence; and the plurality of different communication protocols comprise of the SAS SATA protocol.

Wood teaches a system, method, apparatus and article comprising a predetermined OOB signal utilized by a disk drive coupled to the host computer

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(Fig. 2; col. 2, l. 34 to col. 3, l. 28 and col. 5, ll. 36-54); and data communication utilizing the SATA communication protocol and the SAS communication protocol by the disk drive (col. 5, ll. 16-35).

Therefore, it would have been obvious to one of ordinary skill in this art, at the time of invention was made to modify Haymes in combination with Parallel vs. Serial ATA to include the predetermined OOB sequence, the SAS and the SATA communication protocols as taught by Wood, because doing so would further add and expand Haymes in combination with Parallel vs. Serial ATA system, method, apparatus and article by providing a greater control over the disk drive, such as the spin-up time, so arrays of disk drives may be more effectively used in multi-drive arrays (col. 2, ll. 34-59).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671 and email is chunkuan.lee@uspto.gov. The examiner can normally be reached on 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huynh Kim Ngoc (Kim) can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Mailed responses to this action should be sent to:

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Faxes for Official/formal (After Final) communications or for informal or draft communications (please label "PROPOSED" or "DRAFT") sent to:

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01/09/2006


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1/10/06